Before the

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Spectrum Bridge, Inc./Meld Technologies Request for Waiver of Sections 15.711(b)(2) and 15.711(b)(3) of the Part 15 Rules for White Spaces Devices	)	ET Docket No. 13-81
	)	
Unlicensed Operation in the TV Broadcast Bands	)	ET Docket No. 04-186

To: The Commission

Comments of EIBASS

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) hereby respectfully submits its comments in response to the Commission's March 25, 2013, public notice *Office of Engineering and Technology Declares the Spectrum Bridge, Inc. and Meld Technologies, Inc. request for waiver of Sections 15.711(b)(2) and 15.711(b)(3) of the Rules to be a "Permit-But-Disclose" Proceeding for Ex Parte Purposes and Requests Comment*, DA 13-546. The comment deadline is April 25, 2013, so these comments are timely filed.

I. EIBASS Opposes Waiver Request

1. EIBASS opposes this waiver request. EIBASS believes that it is inappropriate for Spectrum Bridge, as a white spaces devices (WSD) data base administrator, to be the party asking for a waiver of the very rules it is supposed to ensure are followed. It is a classic "fox guarding the hen house" situation.

2. There is no evidence that Spectrum Bridge has the authority to be making commitments on behalf of Meld Technology, Inc. (MeldTech). That is, does Spectrum Bridge own, or otherwise control, MeldTech? The March 25, 2013, Spectrum Bridge waiver request makes promises regarding the marketing of MeldTech WSDs, but provides no explanation how or why promises by Spectrum Bridge would be binding on MeldTech. Indeed, the Spectrum Bridge filing states that

"MeldTech Authorized Distributors would be responsible for ensuring that all devices are professionally and correctly installed"

and

"The responsible party for compliance will be Meld Technology."

Thus, it is MeldTech, and not Spectrum Bridge, that should have filed the waiver request, made the marketing commitments, and directly accepted compliance responsibility.

3. While EIBASS agrees that a global positioning system (GPS) device is unlikely to work in a "big box" store, both legacy 8-VSB and mobile DTV receivers quite likely will work, albeit with error correction capabilities of each system[1] probably at their respective maximums. This results in the DTV or Mobile DTV receiver operating with no error correction "headroom" and reception that is likely near the edge of the "digital cliff." Thus, a 40-mW ERP adjacent-channel WSD represents a serious interference threat to protected DTV receivers already struggling to receive and decode a signal. Since Section 15.5(b) is clear that a Part 15 device may not cause harmful interference to any licensed service, allowing adjacent-channel WSDs inside the service area of an adjacent-channel full-service TV station would also violate this rule section. So Spectrum Bridge has overlooked the need to also obtain waiver of Section 15.5(b). EIBASS submits that waiver of Section 15.5(b) is on its face is not in the public interest.

4. The irony of Spectrum Bridge's waiver request is that it uses as one of its justifications the observation that "In many urban areas the availability of channels for Fixed Use [meaning fixed-site WSDs] are extremely limited." From Day One of the ET Docket 04-186 "vacant TV channels/white spaces" rulemaking EIBASS, the Society of Broadcast Engineers, Inc. (SBE), the National Association of Broadcasters (NAB), and others have been telling the Commission that there are virtually no vacant TV channels in the medium and larger metropolitan areas. That is, in areas with sufficient population to make WSD operations economically viable, most or all available TV channels are already in use by licensed, and therefore protected, users. If not by full-service TV stations, then by Class A TV stations, Low Power TV stations, TV Translator stations (including the input channels to those stations), or Low Power Auxiliary (LPA) stations (*e.g.,* Part 74 licensed wireless microphones). To now have Spectrum Bridge use the lack of available TV channels as the basis for asking for a WSD rule waiver is Chutzpah in its purest form.[2]

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1 ATSC A/64 for legacy DTV, ATSC A/164 for Mobile DTV.

2 Leo Rosten in *The Joys of Yiddish* defines chutzpah as "gall, brazen nerve, effrontery, incredible 'guts,' presumption plus arrogance such as no other word and no other language can do justice to."

5. The Commission has sound technical reasons why fixed WSD should not be able to operate on channels adjacent to broadcast television signals. In paragraph 172 of the November 14, 2008, ET Docket 04-186 Second Report and Order and Memorandum, Opinion and Order (Second R&O/MO&O), the Commission stated:

> 172. In the case of a fixed TVBD in free space, a 4 W EIRP signal (36 dBm) impinging on a standard DTV receiving system (OET-69 parameters) at an antenna separation of 16 meters (approximately 50 feet, a reasonable distance between rooftop mounted TV and TVBD fixed antennas on adjacent structures) would produce a receive carrier level of -8.1 dBm. Assuming that the fixed TVBD signal is at an azimuth in the main beam of the TV receive antenna, interference could occur to TV service at any location where a TV signal is -51 dBm or less **on a first adjacent channel.** Under that criterion for TV signal strength (-28 dBm is typically considered a relatively "strong" TV signal and -53 dBm is considered a medium TV signal), this essentially means that **adjacent channel interference from a fixed TVBD** could occur almost anywhere within a station's service area. Therefore, at this time, we are only prepared to permit fixed TVBDs on channels that are not first adjacent to a TV channel.**[bolding added]**

6. While the Commission's calculations in paragraph 172 are between outdoor WSDs and outdoor TV receiving antennas, the physics behind the FCC's reasoning has not changed and the request for waiver has not shown why these calculations should not be followed.

7. Broadcasters are finding that there are many viewers receiving over-the-air TV using indoor antennas. This means that TV viewers have more problems receiving the DTV signal, again with DTV receivers operation close to the edge of the "digital cliff" and including many of the issues detailed in paragraph 173 of the Second R&O/MO&O, which further stated:

> 173. With regard to personal/portable TVBDs, we first consider indoor reception. In general, we believe that the TVBD and a nearby DTV receiving antenna would not be located such that free space propagation conditions would apply. That is, there will generally be scattering objects (*e.g.*, furniture, persons, fixtures, conductive or dielectric constituents of wall and/or floor construction) within the Fresnel ellipsoid about the ray between the two antennas. Thus, we find that the variation with distance for indoor propagation is generally greater than the distance squared result applicable to free space and we therefore assume a distance variation having an exponent of 2.5. At the -84 dBm threshold for DTV service, **interference could occur whenever an undesired signal is higher than -51 dBm on a first adjacent channel.** In the indoor scenario, a 100 mW (20 dBm) TVBD signal at 10 meters (53 dB of non-free space attenuation) and after 10 dB of wall attenuation, and 3 dB of polarization mismatch *i.e.*, -46 dBm, would exceed that level by 5 dB. In other words, that signal level would likely not cause interference in a neighboring residence or office, except at locations only where DTV signals are relatively

> weak indoors, *i.e.*, where DTV signals are at or below -79 dBm. **[bolding again added.]**

In the above paragraph the FCC takes into consideration the propagation conditions between two WSDs and the protected DTV receiver, but one also needs to consider the fact that these same propagation conditions affect the ability of the DTV receiver to receive the DTV signal itself.

8. While the Commission has found that low-power (100 mW) WSDs would likely not cause adjacent-channel interference to nearby offices or residences, this conclusion was based on the assumption of 10 dB losses caused by the walls between buildings and says nothing about interference to TV receivers being used in the same building. Since TV receivers in the same building the proposed WSD would operate in would not have the 10 dB of wall attenuation assumed by the FCC, the Commission's calculations change such that the adjacent-channel WSD would interfere with TV receivers inside the same building.

9. The Commission appears to have assumed that personal/portable WSDs and indoor adjacent-channel TV reception in the same building would not be an issue as the home viewer would have control of both the WSD and their own TV receiver; meaning the combination TV viewer/WSD operator would control their own interference. But the DTV viewer cannot "self-manage" interference from a WSD used in a big box store, as envisioned by the waiver request, because the DTV viewer will not control the operation of the WSD. This type of interference will become more serious as more stations deploy mobile DTV, where it is more likely that an over-the-air DTV receiver will indeed be used in the same building that the WSD is operating.

10. Even reducing the power of the fixed WSD to the that allowed for personal/portable devices, that is, from 100 mW to 40 mW as requested by Spectrum Bridge/Meld Technology, results in only a 4 dB reduction in power for the WSD. Substituting 4 dB of reduced power into the FCC's equation does not make up for the loss of the 10 dB of wall isolation between buildings and still results in adjacent-channel interference to DTV receivers based on the FCC's own calculations.

11. All too many times EIBASS hears the argument that cases of actual interference have not been documented and therefore the interference threat is merely speculative. But there is no recording device in TV receivers that keeps track of the number of attempts at receiving a particular channel, and reports failed attempts back to the station in question, to a WSD database administrator, or to the Commission; the viewer simply gives up trying to receive the over-the-

air DTV signal. Thus, the lack of documented interference cases does not mean "no interference," it only means no documented interference and frustrated TV viewers.

12. And even when EIBASS has documented actual cases of interference, the Commission has done nothing. For example, the Open Range interference to grandfathered and co-primary TV BAS Channel A10 (2,483.5–2,500 MHz) used by Chicago TV stations WBBM-TV and WGN-TV vs. the Open Range base station at St. John, Indiana. Or the KOVR-TV use of TV BAS Channel A10 and the interference to its ENG-RO site at Sutter Buttes, north of Sacramento, again by Open Range base stations at Marysville and Olivehurst.[3] Another documented case was the Ericsson WC9XSK 2,110-2,120 MHz AWS experimental operation in NYC that caused interference to the WABC-TV/KA40716 ENG-RO site in Queens.[4]

II. Is Meld Technology Already Marketing Its WSD?

13. As shown by the attached Figure 1, MeldTech is apparently already marketing its Model MT300 device. A direct quote from the MeldTech web site is that the MT300 device is "now available." But Spectrum Bridge is on record as saying that GPS positioning doesn't work inside big box stores. Indeed, based on the waiver request submitted by Spectrum Bridge, the MT300 does not currently have GPS geo-location hardware built into the device. So it doesn't matter if the device cannot "see" any GPS satellites as it has no internal hardware able to receive the satellites it can't see. EIBASS therefore questions how MeldTech can be demonstrating its device. It suggests that MeldTech is marketing a modified version of its MT300 before obtaining FCC approval for a defeated protective function, with Spectrum Bridge as a willing accomplice.

14. Spectrum Bridge argues that a rule waiver is necessary because the MeldTech devices will be used inside buildings where GPS is not practical or reliable way to determine location, so including GPS in the device would not provide for reliable operation. Spectrum Bridge also argues that adding GPS capabilities would require additional engineering and integration that would delay getting the device to market. Additionally, MeldTech's own equipment

[3] See the November 17, 2011, EIBASS comments to WC Docket 11-183.
[4] See the March 8, 2011, EIBASS comments to ET Docket 10-236, at paragraphs 6–10.

certification filing for the MT300 shows the only geo-location capability the MeldTech MT300 has is the latitude and longitude coordinates entered by the installer or user.[5]

15. The problem of an end user making unauthorized modifications to an FCC-approved Part 15 device is not hypothetical on EIBASS' part. In 2011 the Commission fined Utah Broadband (UB) $25,000 for disabling the dynamic frequency selection (DFS) of an Unlicensed National Information Infrastructure (U-NII) device, causing harmful interference to FAA Terminal Doppler Weather Radar (TDWR) operations.[6] UB was using Ubiquiti Networks, Inc. (Ubiquiti) XtremeRange5 in an unauthorized manner: By defeating the protections created to ensure no interference to licensed weather radars by allowing the device to improperly operate between 5,580 MHz and 5,640 MHz and near a TDWR location, and with higher than allowable equivalent isotropic radiated power (EIRP) due to the use of unauthorized, higher gain transmitting antennas.

16. Nor does the UB situation appear unique. At http://www.fcc.gov/encyclopedia/weather-radar-interference-enforcement is a list of no fewer than 28 FCC enforcement actions against Part 15 U-NII devices causing interference to FAA weather radars. Thus, the temptation for end users to operate Part 15 devices, even those that have achieved FCC equipment certification, in an unauthorized manner is real. Unfortunately, WSD interference to TV reception or to licensed wireless microphones is unlikely to receive the high-profile enforcement that interference to FAA weather radar demands. All the more reason to require strict compliance with the Part 15 rules for WSDs.

17. Returning to the MeldTech situation, there is no mention that this device can only be marketed to or through big box or similar large retail outlets, that the device must be professionally installed (which the ET Docket 04-186 rulemaking declined to define, anyway), or even that there is a requirement for the so-called "professional installation." That is, there is no warning that this device should not be used in dormitories, apartments, or homes. As noted above, even if the installer enters the correct geographic coordinates during installation, it does not appear that there is anything preventing the end user from changing these coordinates and

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5 See page 14 of the "Database Certification Tests" at https://apps.fcc.gov/oetcf/eas/reports/ViewExhibitReport.cfm?mode=Exhibits&RequestTimeout=500&calledFromFrame=N&application_id=291240&fcc_id=OKVMT300

6 See the February 11, 2011, *Notice of Apparent Liability Forfeiture and Order* issued to Utah Broadband.

allowing the device to operate on almost any channel the user wishes; just enter latitude and longitude values that fools the device into thinking it is not near a licensed station.

18. EIBASS questions whether the Commission has sufficient jurisdiction over which venues that an otherwise allowable Part 15 device can be marketed, anyway. Once a Part 15 device has been approved, the Commission has little authority over how it is marketed, only how it is used. Section 15.21 of the FCC rules contains no restriction on marketing venues. Section 15.27(a) only requires that Part 15 equipment marketed to a consumer must be capable of complying with Part 15 regulations, not that some categories of Part 15 devices may not even be marketed to "consumers," itself an undefined and vague term therefore open to self-serving interpretations. Finally, the Enforcement Bureau of the FCC would appear to lack the required staffing to conduct marketing checks in any meaningful way.

III. Summary

19. The Part 15 WSD rules are already a compromise. While it may be in MeldTech's interest, and disturbingly in Spectrum Bridge's interest, for the FCC to grant a waiver of the requirement to protect adjacent-channel TV stations, it is not in the interests of the licensed services that use these channels to serve the American public. Thus, contrary to Spectrum Bridge's claim, grant of the requested rule waivers would not be in the public interest.

List of Figures

20. The following figure has been prepared as a part of these EIBASS ET Docket 13-81 comments:

1. Evidence that MeldTech is already marketing its Model MT300 white spaces device.

Respectfully submitted,

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EIBASS Comments: ET Docket 13-81 Waiver of First-Adjacent Channel Protection Requirement for White Spaces Devices

Evidence that MeldTech Is Already Marketing Its WSD

(Material downloaded from http://www.meldtech.com/staging/ on March 28, 2013)

MELD TECHNOLOGY

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MT300
Now Available!

Wireless Broadcast

Easy Setup. Perfect for A/V integrators and professional installers: connect (fixed broadcaster) MELD Box, put your TV anywhere you want up to 350 feet away, and tune to your content.

Astounding value! One transmitter serves FULL HD content to an UNLIMITED NUMBER of TVs.

Works where WiFi won't !
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Stream live FULL HD content that without impacting network bandwidth or increasing network security risk

"*Perhaps the most intriguing product I learned about in Vegas,... Pretty ingenious!*" Pete Putman, Sound and Communications Magazine Aug. 2012.

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World's first low-power Pico Broadcast St

MELD Introduces the World's First Low-P
Pico Broadcast Station

New DTV Whitespace Technology Levera
On-Site Content Distribution

Make our Schools Safer Now!

MELD White Paper

FCC Grant of Equipment Authorization

For more information call 408-242-5469, sales@meldtech.com ©MELD Technology Inc.

EIBASS Comments: ET Docket 13-81 Waiver of First-Adjacent Channel Protection Requirement for White Spaces Devices

Evidence that MeldTech Is Already Marketing Its WSD

(Material downloaded from http://www.meldtech.com/staging/ on March 28, 2013)

White Paper

Back to the Future with White Space

By: Jordan Du Val
January 2013

One of the first commercially available TVs was a RCA TRK-9. This bulky but majestic piece of oak furniture, sported one input connector, a 9-inch black and white screen, and weighted nearly 200 lbs. Hooking this TV up was a simple matter of connecting the antenna. Much has changed since then. Now TVs are light and thin, have a dazzling array of sizes, they can the size of a wall or fit inside your smartphone.

When TVs were large, heavy wooden boxes at least aesthetics was not a problem. There was usually plenty of space to tuck wires behind the TV or somewhere behind a large A/V cabinet. However, with the popularity of thin, flat screen LCDTVs and PDPTVs (Flat TVs for short) the aesthetics, cost and practicality of running wires from source to TV is severely compromised. If your TV was portable, you were just out of luck.

Tripping over wires can be hazardous and the wire itself can be expensive with premium "Monster Cables" or digital wires costing over a hundred dollars per set. It is not unusual in a commercial environment to spend thousands of dollars on wiring for TVs.

Flat TVs do not need a lot of space and can be situated practically anywhere and may be portable. This creates a challenge, how do you connect your flat TV to your source without having to run a bunch of audio/video wires? A solution had to be found.

Cutting the Wire.

A company based in the heart of Silicon Valley California is developing systems that allow TVs to break free of their wires. The company is MELD Technology, and the breakthrough device is aptly called, the "MELD Box".

Jan 2013
White Paper

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Evidence that MeldTech Is Already Marketing Its WSD

(Material downloaded from http://www.meldtech.com/staging/ on March 28, 2013)

News Release

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MELD Technology and Spectrum Bridge Collaborate to Deliver the World's First Low-Power Pico Broadcast Station Using TV White Space

LAKE MARY, FL & SUNNYVALE, CA – (Feb. 21, 2013) – MELD Technology, Inc. and Spectrum Bridge, Inc. today announced the availability of the MT300 Personal Broadcast™ station. MELD's patented TV transmission technology enables the use of TV White Space spectrum for sending HD video and control signals over-the-air using unlicensed spectrum.

The MELD transmitter uses a standard TV signal to efficiently transmit multiple HD video streams and control many TVs wirelessly – at a dramatically reduced cost, compared to other media distribution technologies. These benefits make the solution ideal for intelligent signage applications used in airports, hotels and restaurants, convention centers, schools and hospitals. If you can plug a TV into an electric outlet, you have an instant content viewing platform that is limited only by the number of TVs you have in range of the MT300.

"The MT300 is an excellent compliment to a digital media player because it eliminates the complexity, clutter and restrictions of connecting cables," said Jordan DuVal, President/CEO of MELD. "It also reduces the time and cost for deployment and content distribution. By shrinking the cost and complexity of the same proven technology used by professional broadcasters, businesses of all sizes can now Personal Broadcast their content directly to any DTV."

MELD's system uses TV White Space spectrum to reliably send large amounts of HD resolution video using the same type of UHF spectrum as broadcasters. This enables excellent coverage and non-line-of-site connectivity. It obtains the available UHF white space channels for streaming from the Spectrum Bridge spectrum management database. The MELD solution complies with ATSC standards and uses the same frequencies standard Digital TV can already receive.

- MORE -

Evidence that MeldTech Is Already Marketing Its WSD

(Material downloaded from http://www.meldtech.com/staging/ on March 28, 2013)

"The ability to access available broadcast channels by the MELD System will open the door to new and unique applications for local content delivery," said Rod Dir, CEO of Spectrum Bridge. "This solution exemplifies the forward thinking and commercial opportunities for White Space technology."

MELD partnered with Spectrum Bridge to guide them through the FCC certification and integrate the MT300 with their spectrum management platform.

About MELD Technology, Inc.
MELD Technology, Inc. (MELD) develops systems and intellectual properly to simply, efficiently, and cost effectively serve content to any Digital TV ever made. All MELD products are proudly designed in the USA. The company is privately held and headquartered in Sunnyvale, California. MELD's products are protected by US Patent numbers 8,063,996 and 8,341,678 with other patents pending. For more information, contact us at (408) 242-5469 or visit www.MELDTech.com.

About Spectrum Bridge, Inc.
Spectrum Bridge, Inc. (SBI) develops technology and intellectual property to feed the unprecedented growth of the mobile Internet. SBI's cloud based ASA platform provides customers with greater capacity, coverage and utilization of wireless bandwidth through spectrum sharing and other innovative spectrum management solutions. ASA supports a secondary market place for spectrum, provides sharing solutions for the 5GHz band and, in December 2011, was certified as the world's first TVWS spectrum management solution. Spectrum Bridge works closely with industry and regulators around the world to enable access to more wireless spectrum. Spectrum Bridge is privately held and headquartered in Lake Mary Florida. For more information visit www.spectrumbridge.com.

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